

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A motor control device for a multi-phase motor, comprising:
 - a drive circuit for driving said multi-phase motor; and
 - a micro-controller for controlling said drive circuit in accordance with a phase current of the motor; said micro-controller including
 - a means for providing overheat protection, having:
 - an integrating section for integrating a predetermined function of the phase current of the motor with respect to each phase, to obtain an integrated value of the predetermined function of each phase current of the motor which acts as an index of power consumption; and
 - a motor current limit value calculating section for providing a motor current limit value ~~that is based on an~~ the integrated value of ~~a the~~ the predetermined function of ~~the each~~ phase current of the motor ~~to act as an index of power consumption~~ from the integrating section;
 - wherein the motor current limit value obtained by the motor current limit value calculating section gradually decreases a peak value of a sine wave motor current.

2. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits a peak value of the phase current in accordance with an integrated value of a predetermined function of a phase current.
3. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with a maximum value of the given functional integrated values of the respective phase currents.
4. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits a d-axial current in accordance with an integrated value of a predetermined function of a phase current.
5. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits a q-axial current in accordance with an integrated value of a predetermined function of a phase current.
6. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller limits a current obtained by vector-synthesizing a d-axial current and a q-axial current in accordance with an integrated value of a predetermined function of a phase current.
7. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller does not change a phase angle formed by the q-axis and the current obtained by

vector-synthesizing the d-axial current and the q-axial current before and after the motor current is limited.

8. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller changes the phase angle formed by the q-axis and the current obtained by vector-synthesizing the d-axial current and the q-axial current before and after the motor current is limited.

9. (original): The motor control device as claimed in claim 8, wherein, after the motor current is limited, said micro-controller changes the phase angle formed by the q-axis and the current obtained by vector-synthesizing the d-axial current and the q-axial current so as to allow the d-axial current to flow in priority as compared with the state in which the motor current is not limited yet.

10. (original): The motor control device as claimed in claim 8, wherein, after the motor current is limited, said micro-controller changes the phase angle formed by the q-axis and the current obtained by vector-synthesizing the d-axial current and the q-axial current so as to allow the q-axial current to flow in priority as compared with the state in which the motor current is not limited yet.

11. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with an integrated value of a power function of the phase current.
12. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with the integrated value of a deviation between the phase current and a predetermined threshold value.
13. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with the integrated value of a deviation between the power function of the phase current and a predetermined threshold value.
14. (original): The motor control device as claimed in claim 1, wherein said micro-controller limits the motor current in accordance with an integrated value of the power function of a deviation between the phase current and a predetermined threshold value.
15. (original): The motor control device as claimed in claim 11, wherein said micro-controller calculates the power function through polynomial approximation.
16. (original): The motor control device as claimed in claim 11, wherein said micro-controller calculates the power function with reference to a table.

17. (original): The motor control device as claimed in claim 1, wherein said micro-controller independently conducts the calculation in accordance with the phase current flowing direction.

18. (original): The motor control device as claimed in claim 1, wherein said micro-controller conducts the calculation in accordance with an absolute value of the phase current.

19. (original): The motor control device as claimed in claim 1, wherein said micro-controller conducts the calculation in accordance with a detected value of the phase current.

20. (previously presented): The motor control device as claimed in claim 1, wherein said micro-controller conducts the calculation in accordance with the target value of the phase current.